REMARKS

This is in response to the Office Action mailed on August 27, 2002. In the Office Action, claims 1-6, 8, 10, 13-18, and 20-27 were rejected. Objections were raised to claims 7, 9, 11, 12, and 19. In response, claim 20 has been amended; and the remaining claims are unchanged in the application.

Section Two of the Office Action indicates that claims 1, 4, 5, 8, 16-18 and 20 were rejected under 35 U.S.C. § 102(b) as being anticipated by Burns et al. (U.S. Patent No. 5,970,430).

Claim 1 recites, in part, a field device coupleable to a fieldbus process communication loop, the device comprising a power device coupleable to the loop to power the device with energy received from the loop, a fieldbus loop communicator coupleable to the loop, and adapted to bi-directionally communicate over the loop, a controller coupled to the fieldbus loop communicator, diagnostic circuitry coupled to the controller and operably coupleable to the loop, the diagnostic circuitry adapted to measure a loop-related parameter, and wherein the controller provides diagnostic information based upon the loop-related parameter. (Emphasis added).

It is submitted that claim 1 and the disclosure of Burns et al. are quite distinct because the present Specification and claim 1 are directed towards performing diagnostics on the control loop rather than individual devices as in Burns et al. In support, the Specification at page 7, lines 3-20 provides a list of possible loop parameters that can be monitored by diagnostics circuitry 18 by measuring various currents and voltages on the digital loop 18. (Specification, page 6, line 28-30). Examples of loop parameters include instantaneous DC voltage level on the loop and long term voltage level of the DC voltage on the loop. Benefits of monitoring loop parameters include earlier detection of degradation of the process control loop. (See Specification, page 7, lines 26, 27) and, hence, earlier

remedial action to avert failure of the loop. (Specification, page 9, lines 5-9).

In contrast, it is submitted that Burns et al. is primarily designed to measure parameters of the individual devices. These parameters which are measured by individual devices are useful for both process control and for diagnostics on the individual devices. For example, Burns et al. provides a detailed methodology in which diagnostics are performed on field device 16. (Col. 17, line 66 to Col. 20, line 67; and FIG. 5). The various diagnostic tests performed on field device 16 appear related to parameters of device 16, but not the loop as in embodiments of the present invention. The diagnostic tests include testing valve 109 between fully opened and fully closed and performing a test operating cycle to measure pressure within pneumatic lines 118, 122 and 126. [Col. 20, lines 13-36]

In particular, Burns et al. indicates that sensor 124 is important to "improve diagnostic capabilities by facilitating localization of failure, error or fault conditions in the field device 16." (Col. 20, lines 45-47). It is submitted that, in contrast to claim 1, Burns et al. is directed towards process and device diagnostics and not loop diagnostics. Although Applicants note that Burns et al. does appear to hint at measuring loop parameters for diagnostics, further discussion is absent. (See Col. 33, lines 60-67).

Therefore, it is submitted that present claim 1 is patentably distinct from Burns et al. Claims 2-6, 8, 10 and 13-18 depend from claim 1 and are believed to be patentable as well by virtue of their dependency, either directly or indirectly, therefrom.

Applicants respectfully submit that dependent claim 4 is allowable irregardless of the allowability of claim 1 from which it depends. Specifically, dependent claim 4 recites the further limitation wherein "the diagnostic circuitry is

indirectly couplable to the fieldbus process communication loop." The term "indirectly coupling" is defined in the Specification on page six, beginning at line 19 as meaning "any diagnostic circuit that measures a parameter of a circuit of interest without electrically coupling to the circuit of interest." With respect to dependent claim 4, Section Two of the Office Action simply indicated that Burns et al. provide "diagnostic circuitry coupled to the controller and operably couplable to the loop directly or indirectly (Col. 17, lines 50-65)." The portion of the Burns reference cited by the Office Action provide that a device or process diagnostic procedure is stored in and implemented from a field device and may be used to perform device and/or process diagnostics on that device or using that device. However, the cited portion simply does not teach or suggest the indirect coupling recited by dependent claim 4. Accordingly, Applicants respectfully submit that dependent claim 4, as well as dependent claim 5, which depends from dependent claim 4, are allowable irrespective of the allowability of independent claim 1, from which claim 4 depends.

Independent claim 20 was also rejected in Section Two of the Office Action as being anticipated by Burns et al. As stated above, Burns et al., at best, provides a single sentence in column 33, lines 60-67 regarding the potential applicability of aspects of that invention to loop-performance. No further discussion with regard to loop-performance is provided by Burns et al. Independent claim 20 has been amended to further recite that the diagnostics circuitry includes isolation circuitry and is coupled directly to the fieldbus process communication loop. Applicants respectfully submit that this limitation is neither taught nor suggested by Burns et al. Accordingly, Applicants respectfully submit that amended claim 20 is allowable over the art of record. Further, Applicants respectfully submit that

dependent claims 21-25 are allowable as well by virtue of their dependency therefrom.

With this amendment, Applicants provide herewith new independent claim 26 and new dependent claims 27-31, which depend from independent claim 26. Independent claim 26 is somewhat similar to independent claim 20, but differs in an important regard. Specifically, independent claim 26 recites indirectly coupling the diagnostics circuitry to the fieldbus process communication loop. Applicants respectfully submit that this claim is allowable over Burns et al. for at least the same reasons as set forth above with respect to both independent claim 20 and dependent claim 4, which recites the feature of diagnostic circuitry that is indirectly couplable to the fieldbus process communication loop.

In conclusion, Applicants respectfully believe that the entire application is now in condition for allowance. Reconsideration and favorable action are respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: _____

Christopher R. Christenson, Reg. No. 42,413
Suite 1600 - International Centre
900 Second Avenue South
Minneapolis, Minnesota 55402-3319
Phone: (612) 334-3222 Fax: (612) 334-3312

CRC:ajm

MARKED-UP VERSION OF REPLACEMENT CLAIMS

Please amend claim 20 as follows:

20.(Amended) A method of providing diagnostics on a fieldbus process communication loop, the method comprising:

~~operably~~directly coupling diagnostics circuitry, including isolation circuitry, to the fieldbus process communication loop;

measuring a parameter of the loop; and

analyzing the parameter to provide a diagnostic output.